



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
[www.uspto.gov](http://www.uspto.gov)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/484,437	01/18/2000	Tongbi Jiang	M4065.0226/P226	9698
24998	7590	11/18/2003	EXAMINER	
<b>DICKSTEIN SHAPIRO MORIN &amp; OSHINSKY LLP</b> 2101 L STREET NW WASHINGTON, DC 20037-1526				MITCHELL, JAMES M
ART UNIT		PAPER NUMBER		

2827

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/484,437	JIANG, TONGBI	
	Examiner James M. Mitchell	Art Unit 2827	
<i>-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --</i> <b>Period for Reply</b>			
<p>A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.</p> <ul style="list-style-type: none"> <li>- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.</li> <li>- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.</li> <li>- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.</li> <li>- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).</li> <li>- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).</li> </ul>			
<b>Status</b>			
<p>1)<input checked="" type="checkbox"/> Responsive to communication(s) filed on <u>25 June 2003</u>.</p> <p>2a)<input checked="" type="checkbox"/> This action is <b>FINAL</b>.                    2b)<input type="checkbox"/> This action is non-final.</p> <p>3)<input type="checkbox"/> Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under <i>Ex parte Quayle</i>, 1935 C.D. 11, 453 O.G. 213.</p>			
<b>Disposition of Claims</b>			
<p>4)<input checked="" type="checkbox"/> Claim(s) <u>1-9,11,12,14-20 and 31-36</u> is/are pending in the application.</p> <p>4a) Of the above claim(s) _____ is/are withdrawn from consideration.</p> <p>5)<input type="checkbox"/> Claim(s) _____ is/are allowed.</p> <p>6)<input checked="" type="checkbox"/> Claim(s) <u>1-9,11,12,14-20 and 31-36</u> is/are rejected.</p> <p>7)<input type="checkbox"/> Claim(s) _____ is/are objected to.</p> <p>8)<input type="checkbox"/> Claim(s) _____ are subject to restriction and/or election requirement.</p>			
<b>Application Papers</b>			
<p>9)<input type="checkbox"/> The specification is objected to by the Examiner.</p> <p>10)<input type="checkbox"/> The drawing(s) filed on _____ is/are: a)<input type="checkbox"/> accepted or b)<input type="checkbox"/> objected to by the Examiner. Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).</p> <p>11)<input type="checkbox"/> The proposed drawing correction filed on _____ is: a)<input type="checkbox"/> approved b)<input type="checkbox"/> disapproved by the Examiner. If approved, corrected drawings are required in reply to this Office action.</p> <p>12)<input type="checkbox"/> The oath or declaration is objected to by the Examiner.</p>			
<b>Priority under 35 U.S.C. §§ 119 and 120</b>			
<p>13)<input type="checkbox"/> Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).</p> <p>a)<input type="checkbox"/> All    b)<input type="checkbox"/> Some * c)<input type="checkbox"/> None of:</p> <ol style="list-style-type: none"> <li>1.<input type="checkbox"/> Certified copies of the priority documents have been received.</li> <li>2.<input type="checkbox"/> Certified copies of the priority documents have been received in Application No. _____.</li> <li>3.<input type="checkbox"/> Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).</li> </ol> <p>* See the attached detailed Office action for a list of the certified copies not received.</p> <p>14)<input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).</p> <p>a)<input type="checkbox"/> The translation of the foreign language provisional application has been received.</p> <p>15)<input type="checkbox"/> Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.</p>			
<b>Attachment(s)</b>			
<p>1)<input checked="" type="checkbox"/> Notice of References Cited (PTO-892)</p> <p>2)<input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)</p> <p>3)<input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.</p>		<p>4)<input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____.</p> <p>5)<input type="checkbox"/> Notice of Informal Patent Application (PTO-152)</p> <p>6)<input type="checkbox"/> Other: _____.</p>	

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-9, 11, 12, 14-20, 31-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (APA) in combination with Forray (U.S 2002/0062923) and Marrs et al. (US 5,583,378).

APA (Fig.1) discloses a semiconductor device assembly comprising: a solder mask (18) over a substrate (40), a die (12), conductive paths (28) connecting contacts (20) on said die with contacts (22) inherently in said substrate (via within perimeter portion of substrate) and a adhesive layer (18) between said die and said solder mask.

The admitted prior art does not appear to disclose process limitations as exemplified by a partially-cured adhesive layer that is at least 50% partially cured at a temperature below about 100 degree Celsius, the adhesive is a resin bismaleimide with a glassy temperature about 20-50 degrees with initiators which react at a temperature below about 100 degree Celsius, an encapsulant molded over the die or that said contacts are substantially free of contaminants outgassed from said solder mask.

However, Forray utilizes an adhesive with a glassy temperature between 20 to 500 degrees Celsius via a resin bismaleimide.

It would have been obvious to one of ordinary skill in the art to form the adhesive of the admitted prior art with Bismaleimide, in order to bond the chip and to eliminate void formation in the adhesive thereby providing contacts inherently free from contaminant (via limited outgassing/ volatiles effect because no voids formed in adhesive) during a cure process as taught by Forray (Abstract; Par. 0047-0049).

With respect to an encapsulant over the die, because applicant didn't timely traverse examiner's official notice, the well-known statement is deemed accepted and further traversal on the matter waived. Marrs (Fig 2A; Col. 3, Lines 55-58) is provided only to further evidence encapsulants being well known in the art to protect chip or dies.

With respect to claims 1-9, 11-20 and 31-36, these process limitations as exemplified by "partially cured adhesive layer is partially cured at a temperature about 100 degree Celsius" and "wherein said partially cured adhesive layer is at least fifty percent cured at a temperature below about 100 degrees Celsius," are product by process claims. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself, the prior art structure is the same as the claimed invention. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985)

***Response to Arguments***

Applicant's arguments with respect to claims have been considered but are moot in view of the new ground(s) of rejection. To expedite prosecution, examiner will address arguments that are not addressed in the office action. As to applicant's claim that Forray does not disclose a semiconductor mask over a substrate, and that Forray has no teaching of conductive paths connected to assembly, examiner respectfully disagrees in part. As to the solder mask, Forray explicitly discloses the use of a chip mounted on a substrate with an adhesive between the chip and soldermask (Par.0047-0048). In regards to applicant's claim that Forray lacks teaching of conductive paths, examiner notes that Forray was not relied on for that teaching; thus, any argument based on that position is deemed unpersuasive.

***Conclusion***

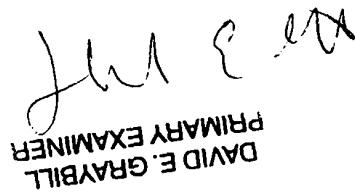
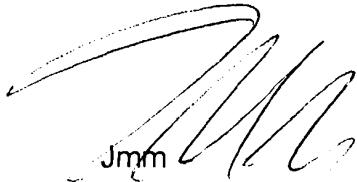
**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Mitchell whose telephone number is (703) 305-0244. The examiner can normally be reached on M-F 10:30-8:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kamand Cuneo can be reached on (703) 308-1233. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.



JUL 3 1997

DAVID E. GRAYBILL  
PRIMARY EXAMINER